

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

PLOUGMANN & VINGTOFT A/S
Sankt Annæ Plads 11
P.O. Box 3007
DK-1021 Copenhagen K
DANEMARK

Date of mailing (day/month/year) 30 January 2002 (30.01.02)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference 24589 PC 1	
International application No. PCT/DK00/00310	International filing date (day/month/year) 08 June 2000 (08.06.00)

1. The following indications appeared on record concerning:

☐ the applicant ☐ the inventor ☒ the agent ☐ the common representative

Name and Address

PLOUGMANN, VINGTOFT & PARTNERS A/S
Sankt Annæ Plads 11
P.O. Box 3007
DK-1021 Copenhagen K
Denmark

State of Nationality

State of Residence

Telephone No.

+45 33 63 93 00

Facsimile No.

+45 33 63 96 00

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person ☒ the name ☐ the address ☐ the nationality ☐ the residence

Name and Address

PLOUGMANN & VINGTOFT A/S
Sankt Annæ Plads 11
P.O. Box 3007
DK-1021 Copenhagen K
Denmark

State of Nationality

State of Residence

Telephone No.

+45 33 63 93 00

Facsimile No.

+45 33 63 96 00

Teleprinter No.

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

☒ the receiving Office ☐ the designated Offices concerned
☐ the International Searching Authority ☒ the elected Offices concerned
☐ the International Preliminary Examining Authority ☐ other:

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Jaime LEITAO

Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Commissioner
 US Department of Commerce
 United States Patent and Trademark
 Office, PCT
 2011 South Clark Place Room
 CP2/5C24
 Arlington, VA 22202
 ETATS-UNIS D'AMERIQUE
 in its capacity as elected Office

Date of mailing (day/month/year) 15 February 2001 (15.02.01)	
International application No. PCT/DK00/00310	Applicant's or agent's file reference 24589 PC 1
International filing date (day/month/year) 08 June 2000 (08.06.00)	Priority date (day/month/year) 09 June 1999 (09.06.99)
Applicant STOUSTRUP, Jakob et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
 03 January 2001 (03.01.01)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer A. Karkachi Telephone No.: (41-22) 338.83.38
--	--

PATENT COOPERATION TREATY

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION CONCERNING
SUBMISSION OR TRANSMITTAL
OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

To:

PLOUGMANN, VINGTOFT & PARTNERS A/S
Sankt Annæ Plads 11
P.O. Box 3007
DK-1021 Copenhagen K
DANEMARK

14 AUG. 2000

CLT/ABL

Date of mailing (day/month/year) 02 August 2000 (02.08.00)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference 24589 PC 1	
International application No. PCT/DK00/00310	
International publication date (day/month/year) Not yet published	
Applicant BEAMCONTROL APS et al	International filing date (day/month/year) 08 June 2000 (08.06.00) Priority date (day/month/year) 09 June 1999 (09.06.99)

- The applicant is hereby notified of the date of receipt (except where the letters "NR" appear in the right-hand column) by the International Bureau of the priority document(s) relating to the earlier application(s) indicated below. Unless otherwise indicated by an asterisk appearing next to a date of receipt, or by the letters "NR", in the right-hand column, the priority document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).
- This updates and replaces any previously issued notification concerning submission or transmittal of priority documents.
- An asterisk(*) appearing next to a date of receipt, in the right-hand column, denotes a priority document submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b). In such a case, the attention of the applicant is directed to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.
- The letters "NR" appearing in the right-hand column denote a priority document which was not received by the International Bureau or which the applicant did not request the receiving Office to prepare and transmit to the International Bureau, as provided by Rule 17.1(a) or (b), respectively. In such a case, the attention of the applicant is directed to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

Priority date	Priority application No.	Country or regional Office or PCT receiving Office	Date of receipt of priority document
09 June 1999 (09.06.99) ✓	PA 1999 00817 ✓	DK	12 July 2000 (12.07.00)
24 Sept 1999 (24.09.99) ✓	PA 1999 01368 ✓	DK	12 July 2000 (12.07.00)
20 Octo 1999 (20.10.99) ✓	PA 1999 01503 ✓	DK	12 July 2000 (12.07.00)
02 Dece 1999 (02.12.99) ✓	PA 1999 01720 ✓	DK	12 July 2000 (12.07.00)
09 Dece 1999 (09.12.99) ✓	PA 1999 01763 ✓	DK	12 July 2000 (12.07.00)
10 Dece 1999 (10.12.99) ✓	PA 1999 01777 ✓	DK	12 July 2000 (12.07.00)
18 Janu 2000 (18.01.00) ✓	PA 2000 00075 ✓	DK	12 July 2000 (12.07.00)
18 Janu 2000 (18.01.00) ✓	PA 2000 00087 ✓	DK	12 July 2000 (12.07.00)
22 Marc 2000 (22.03.00) ✓	PA 2000 00480 ✓	DK	12 July 2000 (12.07.00)

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer

C. Cupello

Telephone No. (41-22) 338.83.38

Form PCT/IB/304 (July 1998)

003442390



PLOUGMANN, VINGTOFT & PARTNERS

PCT

29 MRS. 2001

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 24589 PC 1		FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/DK00/00310	International filing date (day/month/year) 08/06/2000	Priority date (day/month/year) 09/06/1999	
International Patent Classification (IPC) or national classification and IPC H04B7/00			
Applicant BEAMCONTROL APS			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 4 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>			
Date of submission of the demand 03/01/2001		Date of completion of this report 27.03.2001	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized officer McLean, G Telephone No. +49 89 2399 2608 	

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/DK00/00310

I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).):*

Description, pages:

1-53 as originally filed

Claims, No.:

1-56 as originally filed

Drawings, sheets:

1-8 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/DK00/00310

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-56
	No:	Claims	

Inventive step (IS)	Yes:	Claims	1-56
	No:	Claims	

Industrial applicability (IA)	Yes:	Claims	1-56
	No:	Claims	

2. Citations and explanations
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/DK00/00310

Item V

Claims 1, 52 and 53 relate to three diverse applications (determining channel gain, identifying an output signal from a set of output signals, and determination of a position in dependence on determined channel gains) of a system in which transformed received signals are compared with reference signals having undergone the same transform.

Each of these three claims require that a linearly transformed received signal is compared with an original signal which is in effect the transmitted signal, transformed using the same linear transform and equal to the transformed transmitted basis determined on the basis of noiseless emission and reception with known channel gain.

Although it is known from the prior art to take advantage of linear transforms for the purpose of identification or selection, there is no hint that the signal with which the transformed received signal is compared has the properties set out above.

Claims 1, 52 and 53 are considered to be novel and inventive accordingly.

PCT

25 JAN. 2001

INTERNATIONAL SEARCH REPORT

CLT/ABL

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 24589 PC 1	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/DK 00/ 00310	International filing date (day/month/year) 08/06/2000	(Earliest) Priority Date (day/month/year) 09/06/1999
Applicant BEAMCONTROL APS		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 6 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☒ Unity of invention is lacking (see Box II).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

5

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK00/00310

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

See extra sheet.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

The present claims are considered to involve two, *á priori* different inventive concepts and at least four, *á posteriori* different inventive concepts. Therefore, unity of invention is lacking in the meaning of Rule 13.1.

The two, *á priori* different inventive concepts are considered to be represented by the following claims:

- I Claims 1-51 and 53-56 define one first invention relating to a method for determining the channel gain between emitters and receivers by using transformed signals and to a device using said method.
- II Claim 52 defines one second invention relating to a method for transmitting signals, aimed at the identification of a first selected and transmitted output signal.

After the novelty search, wherein documents deemed to anticipate the first invention above was found, the claims are considered to involve four *á posteriori* different inventive concepts. The four different inventive concepts are considered to be represented by the following claims:

- I Claims 43 and 44 define one first invention relating to a method for detecting the presence of an object in the vicinity of emitter(s) and/or receiver(s), where a detection results in the opening of a door.
- II Claims 45-47 define one second invention relating to a movable emitter and stationary receivers, wherein the position of the emitter is determined and used to adjust loudspeakers in an audio system.
- III Claims 48-50 define one third invention relating to a method for determining the interference from signal sources other than the emitter(s), and in particular to determine the presence of cross-talk between electrical conductors.
- IV Claims 53-56 define one fourth invention relating to a pointing device for a computer, wherein the first invention above is used to determine its position in space.

There is no technical relationship among these *á priori* or *á posteriori* different inventions involving one or more of the same or corresponding special technical features as defined in Rule 13.2.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/DK 00/00310

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G01S13/02 G01S15/02 G06F3/00 G06K11/18 H04B7/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G01S G06F G06K G08B H04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	T.L. DIXON: "Wavelet Processing Applied to the Estimation of Continuously Distributed Objects" PROCEEDINGS SPIE, vol. 2569, July 1995 (1995-07), pages 164-174, XP002901376 the whole document	1-3,10, 18-24, 26,29
A	---	4-9,28, 30-37,41
	---	-/--



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

13 October 2000

Date of mailing of the international search report

23. 01. 2001

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Bo Gustavsson

INTERNATIONAL SEARCH REPORT

Internationa Application No
PCT/DK 00/00310

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 486 833 A (T.W. BARRETT) 23 January 1996 (1996-01-23)	1-6,10, 14,17, 19-24, 26, 28-37,39
A	column 1, line 47 -column 3, line 5 column 7, line 35 -column 9, line 55 column 11, line 19 -column 19, line 61	7-9, 11-13, 15,16,18
X	--- US 4 042 928 A (R.A. ALTES) 16 August 1977 (1977-08-16) column 2, line 32 - line 59 column 3, line 48 -column 4, line 50 column 6, line 19 -column 10, line 24	1,19-22, 24-26
A		2-5,16, 17,23, 27-32, 34-38,43
A	--- H. NONAKA ET AL: "Ultrasonic Position Measurement and its Applications to Human Interface" IEEE TRANSACTIONS ON INSTRUMENTATION AND MEASUREMENT, vol. 44, no. 3, June 1995 (1995-06), pages 771-774, XP002901377 the whole document	1,20,22, 25,27, 29,35, 36,38, 45,46, 53-56
A	--- US 5 867 118 A (R.D. MCCOY ET AL) 2 February 1999 (1999-02-02)	1-3,10, 19-22, 24-32, 35-37, 40-43
A	column 4, line 58 -column 5, line 61 column 7, line 29 - line 40 --- C.H. CHEN: "Application of wavelet transforms to ultrasonic NDE and remote-sensing signal analysis" PROCEEDINGS OF THE IEEE, 1994 SP INT. SYMP. ON TIME-FREQUENCY AND TIME-SCALE ANALYSIS, October 1994 (1994-10), pages 472-475, XP002901378 the whole document	1-3,10, 14-18, 20-22, 24,26, 28-32
A	--- SIMON HAYKIN: "Adaptive Signal Processing" 1997 IEEE ULTRASONICS SYMPOSIUM, pages 635-638, XP002901379 the whole document --- -/--	1-14, 19-23, 28-32

INTERNATIONAL SEARCH REPORT

International Application No

PCT/DK 00/00310

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 222 450 A (NORTH AMERICAN PHILIPS CORPORATION) 20 May 1987 (1987-05-20) page 2, line 13 -page 3, line 10 ---	1,2,16, 17,20, 22,24, 26,27, 45,46
A	US 5 521 616 A (D.G. CAPPER ET AL) 28 May 1996 (1996-05-28) the whole document ---	19,21, 24, 26-32, 34-37, 53-56
A	US 4 991 148 A (I.R. GILCHRIST) 5 February 1991 (1991-02-05) the whole document -----	20,22, 25, 28-30, 32,35, 36,53-56

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/DK 00/00310

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5486833	A	23-01-1996	NONE	
US 4042928	A	16-08-1977	NONE	
US 5867118	A	02-02-1999	NONE	
EP 222450	A	20-05-1987	US 4676250 A CA 1263472 A DE 3681880 A JP 62116254 A	30-06-1987 28-11-1989 14-11-1991 27-05-1987
US 5521616	A	28-05-1996	US 5288078 A JP 2199526 A	22-02-1994 07-08-1990
US 4991148	A	05-02-1991	CA 2024527 A,C CA 2124180 A CA 2124181 A DE 69030908 D EP 0420500 A JP 3146891 A	27-03-1991 27-03-1991 27-03-1991 17-07-1997 03-04-1991 21-06-1991